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EUROPEAN PATENT APPLICATION

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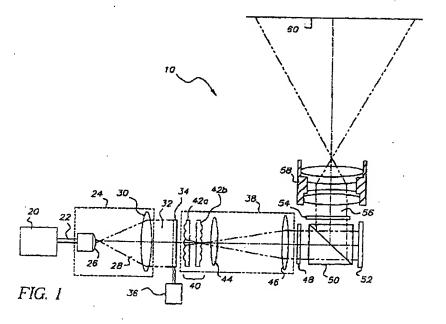
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(54) Laser projection system

(57) A display apparatus (10), includes a laser light source (20) for emitting a light beam; a beam expander (24) for expanding the light beam; a spatial light modulator (52); beam shaping optics (38) for shaping the expanded laser beam to provide uniform illumination of the

spatial light modulator (52), the beam shaping optics including a fly's eye integrator (40) having an array of lenslets; and a moving diffuser (34) located in the laser beam between the laser light source (20) and the spatial light modulator (52).





EUROPEAN SEARCH REPORT

Application Number EP 92 97 8369

Category	Citation of document will of relevant per	h indication, where appropriate,	ı	Relevant to claim	CLASSIFICATION OF THE APPLICATION (INLCL7)
X	WO 96/03676 A (PR 8 February 1996 (OXIMA) 1996-02-08)		1,6, 8-10,13 28,29,	H04N5/74
Υ .	* figures 1,2,3A,	6A,13 *		31,34 2-5,7, 11,12,	
- 1	* page 35; line 9 * page 39, line 3: * page 49, line 7 * page 50, line 1!	2 - line 32 * 4 - page 33, line 26 - page 37, line 17 * 1 - page 40, line 24 - line 25 * 5 - page 51, line 4 *		30,32,33 15-24,27	
,	COHERENT INFORMATI PROCEEDINGS OF THE	PECKLE REDUCTION IN		?-5,7	·
	pages 765-781, XP6 ISSN: 0018-9219 * page 770, left-h		6	,16-21	TECHNICAL FIELDS SEARCHED (IM.CLT) HO4N
4	NO 98/24240 A (LAS 1 June 1998 (1998- 7 page 5, line 19	06-04)		1,12	
			1	-9,13, 5-23, 5-29,31	
*	page 10, line 12 page 15, line 19 page 16, line 10	- line 29 *			
		-/			
	The present search report has	been drawn up tor all claims			•
	Tace of search	Oate of completion of the search	<u> </u>	L	Examples
T	he Hague	23 June 2004		Berw	itz, P
X : particula Y : particula docume	GORY OF CITED DOCUMENTS any relevant if balon alone any relevant if combined with another rated the same category opical background	T : theory or print E : earlier pater after the fillin or D : document of L : document of	t documer data ted in the a	riving the inve t, but publishe	ntion

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EUROPEAN SEARCH REPORT

Application Number

EP 02 07 8369

Category	Citation of document wit of relevant pas	n indication, where appropriate, sages	Relevant to claim	CLASSIFICATION OF TH APPLICATION (Int.C.7
Υ	PATENT ABSTRACTS vol. 2000, no. 09 13 October 2000 (-& JP 2000 162548 16 June 2000 (2000	2006-10-13) A (SONY CORP)	32	
A	* abstract; figure	es 1,6,7 *	28,29	
Y	WO 00/14970 A (HE) 16 March 2000 (200	(LETT-PACKARD)	33	
A	* figures 1,2,14-1	6 * - page 14, line 7 *	1,2,7-9, 14,16, 21-23, 27-29, 31,35	
l	EP 1 014 196 A (NI 28 June 2000 (2000	KON) -05-28)	1,2,6, 16,20	TECHNICAL FIELDS
A	US 6 250 778 B1 (D 26 June 2001 (2001	 DUMUKI) -86-26)	1,7,14, 15, 21-23,	SEARCHED (Int.Cl.7)
	* column 1, line 44 * column 2, line 52 * column 8, line 54 * figures 1,8 *	2 - column 5, line 36	* 27.28.34	
	JS 4 619 508 A (SHI 28 October 1986 (19 3 figures 8-10 * 4 column 5, line 29	BUYA ET AL;} 86-10-28) - column 6, line 15	* 1,14,15	
	The present search report has b	een drawn up for all claims		
	he Hague	Date of completion of the search 23 June 2004		Examiner 4 - D
X : particult Y : particult docume A : technol	GORY OF CITED DOOLMENTS any relevant if taion alone prly relevant if combined with anothe nt of the same category ogleat background iten displayers	T: theory or prim E: defiler patent effer the filling D: document obs L: document obs	ciple underlying the invended	। द ा, वर



EUROPEAN SEARCH REPORT

Application Number EP 02 07 8369

	DOCUMENTS CONSIDE		<u> </u>				
Category	Citation of decument with indi of relevant passage	cation, where appropriate,	Relevant to daim	CLASSIFICATION OF THE APPLICATION (INLCL7)			
A	WO 96/25008 A (DAIML 15 August 1996 (1996 * abstract; figure 1	-08-15)	1,28-30				
A	US 6 170 953 B1 (LEE 9 January 2001 (2001 * column 1, line 60 * figure 1 *	-01-09)	1,28,29,	a.			
Ì	US 5 967 636 A (STAR) 19 October 1999 (1999 * abstract; figure 2 * column 5, line 54)-10-19) *	1,28,33				
Y	US 6 233 025 B1 (WAL1 15 May 2001 (2001-05-	ENSTEIN)	30				
4	* abstract; figures 1	,2 *	28,29	•			
				TECHNICAL FIELDS SEARCHED (InLCL7)			
	•						
	he present search report has been						
	he Hague	23 June 2004	Ramus	Examiner			
CATE X : perticut Y : perticut document A : technolo	GORY OF CITED DOCUMENTS If y relovant if taken above inty relovant if taken above inty relovant if combined with another int of the same outegory goldal bookungund	T: theory or principle E: earlier peters doin after the filing dat D: document ofted it L: document ofted for	n the application or other reasons	dian on, or			
O : n on:-writ	tion disclosure diate document	ë : minber of the as	& : member of the same patent family, corresponding document				

EP 1 292 134 A3

ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO.

EP 02 07 8369

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

23-06-2004

6	Patent document ited in search report	rt	Publication date		Patent family member(s)	Publication data
W	9603676	A	98-02-1996	US US US AU WO	5517263 A 5700076 A 5704700 A 3206395 A 9603676 A1	14-05-199 23-12-199 06-01-199 22-02-199 08-02-199
WO	9824240	Α	04-06-1998	UA WO	7412898 A 9824240 A1	22-06-199 04-06-199
JP	2000162548	A	16-06-2000	MON		
WO	0014970	A	16-03-2099	MO NS	6095722 A 0014970 A1	21-12-199 16-03-200
EP	1014196	A	28-06-2000	JP JP EP KR US US US	2000182933 A 2001085293 A 1014196 A2 2006048227 A 2003160949 A1 2003156269 A1 2003156266 A1 6563567 B1	30-06-260 30-03-200 28-06-200 25-07-200 28-08-200 21-08-200 21-08-200 13-05-200
US	6250778	Bl	26-06-2001	JP	2000199872 A	18-07-2006
US	4619508	A	28-19-1986	JP JP JP JP JP	1986925 C 7021583 B 61169815 A 2086406 C 7092556 B 60230629 A	08-11-1995 08-03-1995 31-07-1986 02-09-1996 09-10-1995 16-11-1985
WO	9625008	A	15-08-1996	DE AU DE DE WO EP US	19504047 C1 4786996 A 19680063 D2 59601773 D1 9625008 A1 0808543 A1 5894489 A	25-07-1996 27-08-1996 20-05-1998 02-06-1999 15-08-1996 26-11-1997 13-04-1999
US (5170953	81	09-01-2001	NONE		
US !	967636	A	19-10-1999	NONE		
US 6	233025	B1	15-05-2001	DE DE	4432029 A1 59504985 D1	28-03-1996 11-03-1999

ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO.

EP 02 07 8369

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

23-06-2004

Palent document cited in search report		Publication date		Patent family member(s)	Publication date
US 6233025	B1		WO EP US	9608116 A1 0728400 A1 5828424 A	14-03-199 28-08-199 27-10-199
•					
•					

b For more details about this annex : see Official Journal of the European Patent Office, No. 12/82

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